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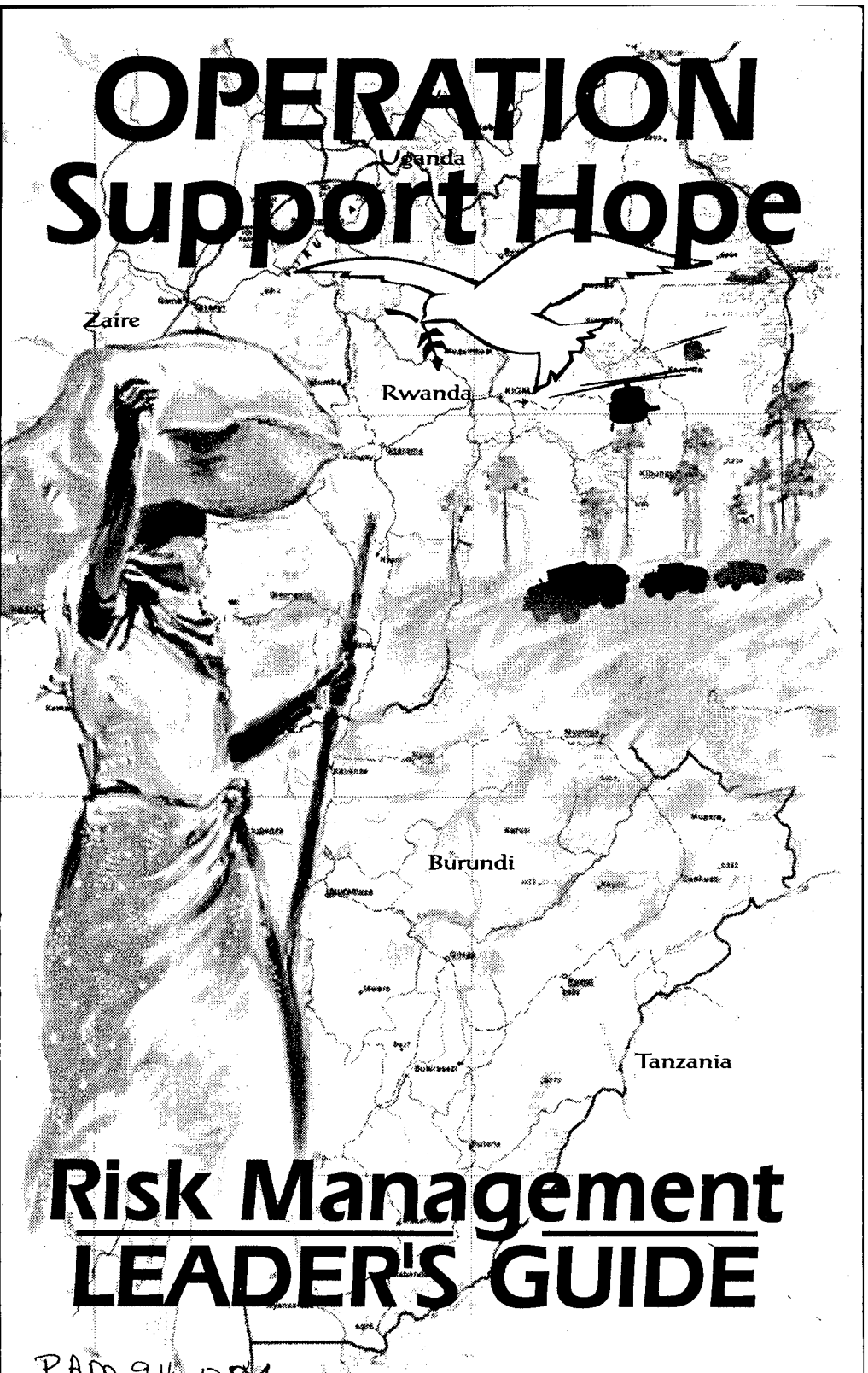

Risk Management LEADER'S GUIDE

PAM 94-08/01

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Foreword

As America's Army responds to another humanitarian relief request, we find that we're getting better at this new mission. Nevertheless, there are still lessons to be learned if we are to protect our forces. There might be some surprises for us in the East Africa area of operations, but one fact is clear—our soldiers face greater danger from illness and accidents than from hostile action. That means that the accident-prevention component of force protection takes on added importance.

The risk of accidents during long-haul logistical operations is an obvious threat. Other risks will come with the harsh environment. The solution is for commanders and other leaders to *manage* those risks. The risk-management process of hazard identification and control must be built into day-to-day decision making. When leaders and soldiers find themselves facing unfamiliar situations that no standard or policy cover, risk management is an effective tool to protect the force.

That doesn't mean we can throw away the book. What it does mean is that the leaders and soldiers of Operation Support Hope will be writing new chapters. The ideas in this guide are a mere outline to help leaders anticipate the situation. Applying the force-protection principles herein will help leaders add another link to our chain of successful operations short of war.

In Operation Support Hope, we've come a long way to save lives—not to lose them.

THOMAS W. GARRETT
Brigadier General, USA
Director of Army Safety

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Section I

Risk Management

Risk management is the *process* of making operations safer without compromising the mission. Accident experience shows that mission-stopper accidents occur when victims are ignorant of hazards and countermeasures or when *directed* countermeasures are ignored. The greatest effort should be in hazard identification and countermeasure enforcement. This section provides leaders guidance on integrating the risk-management approach into unit operations.

Rules

Four rules guide the risk-management process:

- **Integrate risk management into planning.** Risk management begins with planning and readily complements current Army processes.
- **Accept no unnecessary risks.** The leader who has the authority to accept a risk has the responsibility to protect his soldiers from unnecessary risks. An unnecessary risk is one that, if eliminated, still allows mission accomplishment.
- **Make risk decisions at the proper level.** Make risk decisions at a level consistent with the commander's

guidance. The leader responsible for the mission should make the risk decisions.

• **Accept risks if benefits outweigh potential losses.** Leaders must take necessary risks to accomplish the mission. Leaders must understand that risk-taking requires a decision-making process that balances mission benefits with potential losses.

Process

There are five steps to the risk-management process.

• **Step 1—Identify the hazards.** The hazards are the potential sources of danger that could be encountered while performing a task or mission. For example, a river crossing is anticipated while conducting a foot patrol. Factors that determine hazards are water depth and current, hypothermia, fatigue, debris on and under water, change in conditions caused by weather, and swimming ability of the soldiers. There could be other, less obvious hazards that would become apparent during planning. Leaders should seek to identify all these hazards before the operation.

• **Step 2—Assess the hazards.** Identified hazards must be assessed to determine their cumulative effect on the mission or objective. Each of the hazards is analyzed to determine the probability of its causing a problem and the severity of the consequences should such a problem occur.

RISK ASSESSMENT MATRIX

EFFECT		HAZARD PROBABILITY				
		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
Catastrophic	I	EXTREMELY HIGH				
Critical	II		HIGH			
Moderate	III		MEDIUM			
Negligible	IV				LOW	

Exercising judgment on how to eliminate or reduce hazards to lessen the overall risk is inherent in the risk assessment process. This step concludes with a risk assessment that describes the impact of the combined hazards. The result is a statement that quantifies the risk associated with the operation: extremely high, high, medium, or low.

• **Step 3—Make a risk decision.** Leaders are expected to weigh the risk against the benefits of performing an operation; however, the mentality is more often mission-first. Keep in mind that unnecessary risk can be a hindrance to mission accomplishment. Risk decisions are made at a level of command that corresponds to the degree of risk. As such, guidance should be established as to who makes which risk decisions. For example, high-risk squad actions may be elevated to the company commander for acceptance or denial. A brigade commander may direct that company-level risk decisions be made by the company commander if the risk is low, battalion commander if the risk is medium, and brigade commander if the risk is high or extremely high. In the case of battalion-level decisions, the chain may go from battalion to brigade to division.

• **Step 4—Implement controls.** The controls established as a result of the first three steps are implemented in step four. Included is leader action to reduce or eliminate hazards. Integrate specific controls into plans, orders, SOPs, training performance standards, and rehearsals. Knowledge of controls down to the individual soldier is essential.

• **Step 5—Supervise.** Supervision in this sense goes beyond ensuring that people do what is expected of them. It includes following up during and after an action to ensure that all went according to plan, reevaluating the plan or making adjustments as required to accommodate unforeseen issues, and incorporating lessons learned for future use.

Integration techniques

Two techniques are critical to maintaining mission focus:

1. Individual/leader risk management (focuses on

individual through company-level command thought processes to recognize hazards and take action to reduce risk). Use FM 22-100: Military Leadership problem solving, decision making, and planning process. Identify the problem (hazard), gather information, develop courses of action, analyze and compare actions, make a decision, make a plan, and implement the plan. Memory aids such as METT-T and checklists help promote consistency.

2. Command echelons risk management. This technique uses the FM 101-5: Staff Organization and Operations Manual military decision-making process. This process integrates safety and risk assessment into operational decisions normally associated with battalion and higher planning and operations. The commander directs the staff to identify necessary risks and risk controls as "considerations affecting the possible courses of action." Staff officers use memory aids such as METT-T to promote consistency. The final commander's estimate and concept addresses significant risk acceptance, eliminations, and controls. Implement these decisions directly into applicable areas of OPLANS (ORDERS). Commanders must ensure dissemination and enforcement of risk decisions and controls down to soldier level.

Basic METT-T hazards

The following METT-T hazards are provided to provoke thought about issues to consider in your risk-management actions. They are not all-inclusive.

Mission

- East Africa contingency in support of Operation Support Hope
- Accelerated mobilizations with short preparations
- Combined task force working with other nations
- Command relationships
- Contingency mission assignments with mission orders
- 24-hour operations
- Joint/coalition force missions; more complex
  - Boundaries/sectors
  - Communications

- ❑ Coordination

Enemy (Environment)

- Congested bivouac, port, and staging areas
- Strong religion-influenced cultural taboos and lifestyle differences
- Roads heavily used by pedestrians and beasts of burden
- Little civilian compliance with established driving procedures, and no defensive driving awareness
- High temperatures/humidity
- Thunderstorms with flash floods and extreme mud
- Snakes, scorpions, centipedes, sea snakes, spiders, bugs

Terrain

- Sub-Saharan
  - ❑ Flash floods possible
  - ❑ Poor wheeled-vehicle off-road mobility/stability
  - ❑ Limited water sources
  - ❑ Undefined trail boundaries
  - ❑ No natural shade
  - ❑ Snakes, scorpions
- Rocky, mountain plateaus
  - ❑ Poorly surfaced roads
  - ❑ Off-road vehicle travel poor to impossible
  - ❑ Limited water sources
  - ❑ Mirage visibility degradation
  - ❑ Snakes, scorpions
  - ❑ Falling rocks

Troops

- Assessment of training proficiency on complex tasks involving:
  - ❑ Field sanitation teams
  - ❑ NBC training
  - ❑ Climate
  - ❑ Maintenance
  - ❑ Heat-injury detection/prevention training
  - ❑ Night operations training
  - ❑ Physical fitness training
  - ❑ Pilot/operator training on local conditions
  - ❑ Leadership training

- Troop acclimatization
- Water availability
- Troop morale, stress, esprit, discipline
- Troop fatigue (quality and quantity of rest)
- Command climate and leadership quality
- Equipment status (increased maintenance requirements and long combat service support lines of communication)
- NBC equipment heat stress and visibility/mobility degradation
- Personal protective/safety equipment availability (goggles, work gloves, sunscreens, chapstick, eye ointment, canteens, helmets, ear protection, specialized equipment, and plastic bags to store individual clothing in for protection from bugs, etc.)

Time

- Little time for preparations (activations and mobilizations)
- Jet-lag effects
- Intense pace

Section II

Medical Risks

Taken from *Staying Healthy in Uganda, Zaire, and Rwanda,* 27 July 1994. Prepared for U.S. Army MEDCOM by Preventive Medicine Division, Walter Reed Army Institute of Research.

Countries in sub-Saharan Africa have the highest concentration of serious diseases in the world. Nearly all of them, however, can be prevented through forceful enforcement of the following prevention measures. In addition, the field sanitation principles outlined in FM 21-10 must be followed to prevent disease. Company commanders and other leaders must also use their field sanitation teams to help in enforcement of good field sanitation.

Threats

Impure water

Local water is highly contaminated with life-threatening cholera and other germs that cause stomach cramps and severe diarrhea. These germs easily get on your hands.

Prevention: Do not drink or use untreated water or ice, and

always wash your hands before eating.

Impure food
Local food may contain parasites that can cause serious illness.
Prevention: Do not eat local foods. Eat only U.S. military approved foods.

Malaria
Malaria is transmitted by mosquitoes, and it can kill.
Prevention: Take malaria pills as prescribed.

Insects
Insects transmit many life-threatening diseases in this part of the world.
Prevention: Use DEET repellent on exposed skin. Treat bed nets and clothing with permethrin spray. Sleep under a bed net.

HIV (AIDS)
This virus will kill you slowly. You get it through sex, infected needles, and blood.
Prevention: Avoid sex. Wear gloves when handling blood or body fluids.

Human body fluids and waste
Hepatitis and other diseases can be spread by contact with human waste, blood, and body fluids.
Prevention: Wear gloves when handling blood, body fluids, or feces.

Animals
Animals may transmit rabies and other life-threatening diseases to humans.
Prevention: Avoid contact with *all* animals. If bitten or scratched, seek medical attention immediately.

Rivers and lakes
Rivers and lakes may contain parasites that penetrate unprotected skin and cause serious illness.

Prevention: Do not swim or bathe in ponds, streams, rivers, or lakes. If you must wade in fresh water, make sure your skin is protected from the water.

Immunizations

Tetanus vaccine
A booster is recommended every 10 years (every 5 years when treatment is given for a "dirty" wound).

Typhoid vaccine
A booster is required if more than 3 years (for the shot) or 5 years (for the oral vaccine) have passed since the last dose.

Yellow fever vaccine
A booster is required if more than 10 years have passed since the last dose.

Immune globulin
Should be given to all deployed to prevent Hepatitis A.

Hepatitis B vaccine
All health-care workers and grave-registration workers must receive this 3-shot series. Others at high risk of infection are encouraged to receive as well.

Rabies vaccine
Animal handlers and Special Forces personnel should receive the pre-exposure rabies vaccination series.

Meningococcal vaccine
Once as an adult (most soldiers received in basic training).

Measles and rubella vaccine
A one-time booster is recommended for soldiers born after 1956 (currently given during basic training).

Polio vaccine
A one-time adult booster is recommended for soldiers (usually given during basic training).

Cholera vaccine
NOT RECOMMENDED. The licensed cholera vaccine is not very effective, requires a prolonged series of shots, has bothersome side effects, and interferes with yellow-fever immunization.

Plague vaccine
No plague vaccine is available.

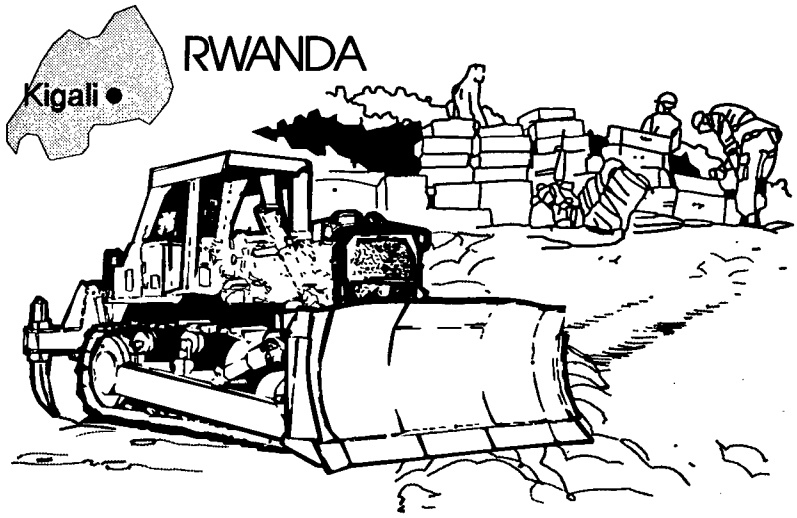
Preventive medications and other measures

Malaria
Mefloquine (250 mg) tablet once a week, or doxycycline (100 mg) capsule once a day for pilots. *(Until more information is available, women should avoid becoming pregnant while taking mefloquine or doxycycline.)* In some cases, medical authorities may recommend taking one Primaquine (15 mg) tablet per day for 14 days after leaving the malarious area.

Tuberculosis
Soldiers should receive a skin test (PPD) for tuberculosis before deploying and 3 months after returning to CONUS. The pre-deployment test is NOT necessary if a skin test result has been documented within the past 12 months.

Pregnancy
Soldiers who are pregnant should contact medical personnel as soon as possible. In addition, pregnant soldiers should not take mefloquine or doxycycline.

Immunodeficiency
Soldiers who are immunodeficient should contact medical personnel as soon as possible. Immunodeficiency can be caused by some types of medicines, certain medical conditions, or by removal of the spleen.



Section III

Operational Risks

The key to risk management is hazard identification. The following list and others in this guide give you a start in finding common threats to your force. Once you identify the threat, you must evaluate and control it. Most control measures are obvious. Experience will quickly show many other threats and fixes. Share them with other leaders. Don't make every unit discover hazards on its own.

General leadership

Threat: Improvised headquarters endanger C3 capability.

- Select most suitable facility available.
- Do not operate out of unsound buildings.
- Set up internal fire/health/safety structure.

Threat: Leadership and VIPs are exposed on field visits.

- Include accident potential in cost/benefit of visits.
- Include safety staff in preparing VIP itinerary.

Threat: Breakdown in weapons-handling discipline.

- Brief soldiers on weapons and ammunition security.
- Secure weapons in storage when not needed.

Threat: Lack of protective equipment for rescue/remains recovery.

- Consult Preventive Medicine to determine what's needed.
- Obtain required gloves, masks, etc.

Threat: Psychological problems resulting from remains recovery.

- Recognize signs of stress in subordinates.
- Take advantage of chaplain and mental-health resources.
- Use down time for morale-building activities.

Threat: Successive disasters are common.

- Ensure that staffs prepare for repeat or secondary disaster.
- Protect or move critical relief equipment.

Threat: Fatigue.

- Establish sleep discipline.
- Eliminate nonproductive duties.
- Minimize travel within the impact zone.
- Discourage nightlife.
- Create least-disruptive bivouac possible.

Threat: Chain of command not obvious early on.

- Concentrate on small-unit tasks.
- Expect rapid change.
- Reduce noncritical communication.

Threat: Piped water supplies not trustworthy.

- Use only piped water cleared by Preventive Medicine officials.

- Use military water purification sources.
- Use bottled water.

Threat: Over-motivation.
- Control troop enthusiasm.
- Stress need to conserve relief-force capability.

Threat: Mixed military-civilian crews have different standards.
- Let headquarters liaisons settle differences.
- Listen to experienced civil-relief experts.
- Hold to Army safety standards.

Threat: Relief logistics centers lack organic firefighters.
- Mark hazardous materials with standard placards.
- Make a self-help fire plan.
- Locate working fire extinguishers and guard them.

Threat: Sealed commo shelters and shop vans accumulate toxic gases.
- Assure that all vents are open.
- Use only approved heaters.
- Study material safety data sheets (MSDS).
- Check vehicle and generator exhaust flows.

Threat: Inadequate trash collection creates fire/sanitation risk.
- Set up routine police calls.
- Learn the approved trash dump/pickup point.

Threat: Fixed warehouse fire sprinkler systems are not reliable.
- Provide extinguishers/fire buckets.
- Separate flammables from other relief-force storage.
- Arrange alternate fire protection.

Threat: Improvised barracks exits are warped or blocked.
- Have unit fire marshal check troop evacuation routes.

- Clear several paths of exit.

Threat: Small detachments set up in substandard buildings.

- Don't occupy buildings until checked by engineers.
- Get medical review of improvised kitchens/mess areas.
- Use field sites rather than suspect structures.
- Maintain sanitation standards.
- Don't trust local water, gas, or electrical systems.

Life support centers and bivouac areas

Threat: Lines of authority may not be clear.

- Press for limits of responsibility.
- Maintain internal chain of command.
- Warn troops to exercise judgment in civil issues.
- Establish liaison with relief agencies on site.
- Manage risks when life and health are at stake.

Threat: Tent stakes and guy wires.

- Mark safe lanes with engineer tape.
- Publish warnings to civilians.
- Cover exposed stakes with sandbags.

Threat: Tents will fall in high winds.

- Inspect for proper tent construction.
- Plan secondary evacuation sites.
- Set up an early-warning system.
- Establish and test a G2 weather-warning net.
- Prepare for successive disaster.

Threat: Generators and light sets are not grounded.

- Inspect before power-up and periodically thereafter.
- Be sure generator TMs are available.
- Assign licensed operators only.

Threat: Generators are placed too close to sleeping area.

- Keep generators at limit of power cable.
- Build sandbag noise barriers.

- Place mobile obstacles between generators and tents.
- Minimize generator noise at night.

Threat: Generator POL and refueling points are uphill from tents.
- Move incorrectly placed generators.
- Watch for changes in living areas and generator sites.
- Avoid fuel saturation at fuel points (spills and leaks).

Threat: Tents are too close together.
- Maintain safe fire distance and firebreak blocks.
- Avoid collection of combustible material between tents.
- Mark fire-vehicle access lanes.
- Arrange drill or walk-through with fire department.

Threat: Smoking in tents.
- Establish safe smoking areas.
- Publicize rules to civilian residents.

Threat: Lack of comprehensive fire and disaster plan.
- Establish and publish a coordinated plan.
- Think about the next disaster.
- Post exit signs and mark paths.
- Evaluate improvised family-privacy barriers.

Threat: Tent electrical systems are over-elaborate.
- Perform informal surveys of electrical loads.
- Limit the number of civilian appliances in use.
- Have an engineer evaluate any modifications.
- Limit the number of outlets.

Threat: Tent wiring systems become hazard in storms.
- Include electrical shutdown in storm plan.
- Assign individuals to cut power at the generator.
- Identify critical circuits that should stay up.

Threat: Vehicles are parked uphill from living areas.
- Mark safe parking areas downhill from tents.
- Require use of emergency brakes and chocks.

Threat: Vehicles operate in bivouac areas at night.
- Limit times and places for transient vehicles.
- Use ground guides in occupied areas at all times.

Threat: Concertina wire is used in pedestrian areas.
- Remove unneeded wire.
- Mark essential wire with engineer tape.
- Find secure storage for weapons and high-cost items.

Threat: Weather changes may require heaters.
- Use only approved heaters.
- Install and operate by the book.
- Post a watch to prevent fires and burns.
- Don't dry clothing too near stoves.

Threat: Tents are pitched without liners.
- Plan to retrofit liners if wet or cold conditions threaten.
- Watch for civilian-resident improvisations.

Threat: Tents are floored with straw or other combustibles.
- Do not use combustible floor covers.
- Set up routine inspection cycle.

Threat: Tent stakes are not properly driven.
- Check instructions for high-friction angle.
- Reset stakes driven at 90 degrees to guy line.

Threat: Tents lack fire extinguishers.
- Check supply system/relief depots for extinguishers.
- Coordinate with civil fire departments.
- Provide sand and water bucket alternatives.
- Train long-term residents on use.
- Arrange recharge and refill with fire department.

Threat: Children playing around water, traffic, and work areas.
- Have responsible persons establish activity program.
- Isolate hazards in initial planning.

- Post guards and patrols.
- Create secure storage areas.

Threat: Civilian relief packages could include hazardous items.

- Check contents before distribution.
- Post warnings of inappropriate materials.
- Observe what children receive (BIC lighters, etc.).
- Feed information back to provider agencies.

Construction, rescue, and cleanup

Threat: Untrained troops are issued power equipment.

- Find personnel who have the proper background.
- Establish tailgate training sessions.
- Put only capable troops on risky equipment.
- Request help from Task Force or civil trainers.
- Keep teams properly dispersed; don't bunch up.

Threat: Untrained personnel enter confined spaces.

- Prohibit entry, even in life-or-death cases.
- Communicate rapidly to trained rescuers.
- Stand by to offer outside assistance.

Threat: Heavy equipment and material-handling equipment operators are not trained/licensed.

- Enforce operator qualification standards.
- Communicate training and personnel needs to the G1.

Threat: Personnel encounter toxic/hazardous waste.

- Only trained and equipped personnel handle waste.
- Record and report suspect sites to next higher headquarters.

Threat: Improvised crews lack personal protective equipment.

- Include projected needs in predeployment plan.
- Learn the emergency supply system.
- Deploy with all supplies of work gloves available.

- Contact task force depots immediately on arrival.

Threat: Military and civilian crews do not share signals.

- Compare signals before rigging work.
- Try to work with same civilian helpers continually.
- Brief civilians involved in slingload operations.

Threat: Hot refueling of powered equipment.

- Allow cool-down period except when life is at risk.
- Provide portable fire extinguishers.

Threat: Improvised slings and rigging.

- Use only approved and inspected hooks and slings.
- Keep people away from the area underneath rigging.

Threat: Obsolete or marginal equipment is pressed into service.

- Upgrade any substandard equipment that must be used.
- Find local experienced personnel to use and maintain gear.

Threat: Small fuel containers are improvised.

- Use only approved containers.
- Centralize refueling points.
- Obtain extinguishers.

Threat: Troops encounter uncovered wells, sewers, pits, and traps.

- Get information from locals.
- Recon new areas of operation.
- Report potential problems to other elements.
- Mark perimeter with engineer tape.

Threat: Soldiers use front-loaders and other material-handling equipment for workstands.

- Use only man-rated ladders and stands.
- Do not stand on forklift tines or unguarded pallets.

Threat: Bridging units face unusually high currents in rainy seasons.

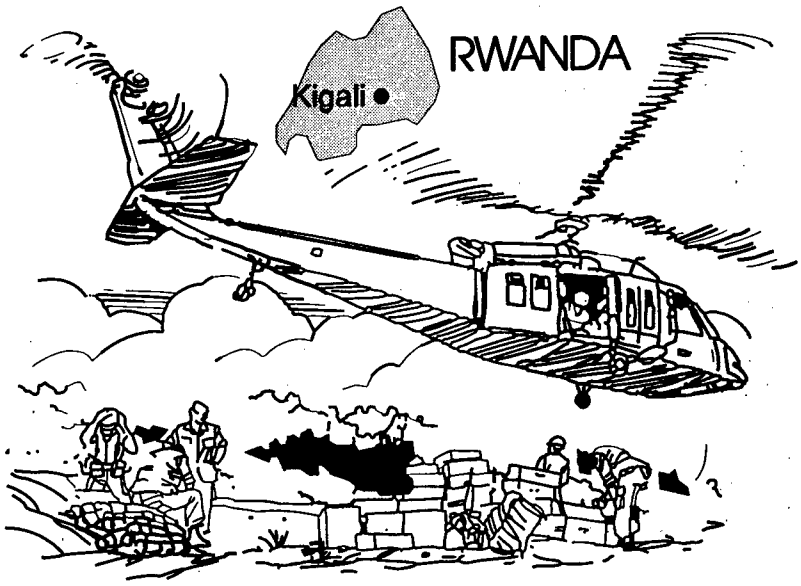
- Assure PFDs are worn.
- Rig downstream lines, if possible.
- Post rescue boats.
- Stay alert to trees and debris.

Threat: Warehouse-type forklifts are used in rough terrain.

- Use the proper lift for the situation.
- Prepare working surface for small-wheeled trucks.

Threat: Waters are contaminated with waste and hazmat.

- Minimize contact with streams.
- Assure inoculations at POM.
- Drink approved water only.



Section IV

Aviation Operations

This section addresses areas of concern in aviation operations. Listed under each area are actions to take to reduce the hazards.

Operational threats

Threat: ATC capability is saturated.

- Coordinate early with task-force operations and local airspace control liaison.
- Put extreme effort into airspace awareness.

Threat: Local fire-protection capability is exceeded.

- Use task-force extinguisher supply channels to cover landing zones.
- Check closed civilian airfields for trained help.

Threat: Untrained civilian and military passengers.

- Be sure everyone gets preflight safety briefing.
- Provide disposable earplugs.
- Set up a manned passenger holding area at busy landing zones.

Threat: Radio frequencies are not compatible with all agencies.

- Work with task-force operations to organize frequencies and gear.
- Use liaisons with police, medical, and rescue groups.

Threat: Marginal-weather medevac missions are called.

- Move decision making to a level removed from crisis.
- Don't ignore nonaviation medevac capabilities.

Threat: Tall obstacles may not have warning lights.

- Check topo maps and imagery for towers, smokestacks, etc.
- Watch survey date of topos.
- Talk to locals during flight planning.
- See headquarters for fresh photomosaics.

Threat: External cargo falls from nets.

- Double-check rigging.
- Avoid flight over built-up areas.
- Keep safe jettison areas in mind.

Area operation survey

- Survey area of operation, and establish hazard maps and restricted flight areas as first order of business.
- Brief hazards and obstacles for every mission.
- Brief all crewmembers on their responsibility for scanning to detect hazards and obstacles and to inform pilot on controls.
- Develop an Aviator's Procedure Guide for the area of operation.
- Establish EHIRP for area of operation.

- Include EHIRP in mission briefings (unit SOP).
- Spell out crew duties and crew coordination requirements.
- Follow EHIRP procedures once they are established.

All aircraft

Maintenance

- Inspect seals, tires, and such frequently for blisters and other signs of deterioration.
- Inspect vibration isolators frequently and replace where cracking or permanent set is excessive.
- Inspect and clean flaps, control hinges, pulleys, bearings, worm gears, cowl slides, and landing gear regularly to arrest corrosive action.
- Inspect dead air spaces in fuselage at regular intervals for accumulation of debris. Remove accumulated debris to prevent change in aircraft weight and balance.
- Clean instrument filters thoroughly at regular intervals. Replace wornout filters promptly.
- Install protective covers and dust excluder plugs on all engine openings, vents, air intakes, exhaust outlets, breathers, propeller hubs and feathering domes, cowls, and other vital openings to prevent entry of dirt and debris. Keep aircraft pointed into wind when not being serviced or prepared for flight.
- Make all possible ground checks before starting engine. Inspect controls for freedom of movement.
- Flush engines more frequently in a dusty environment.

Depth perception at night

- Drop chem light stick on ground before landing to overcome illusion that aircraft is higher above ground than it actually is.
- Remind pilots that radar altimeters provide the only effective reference to properly gauge altitude over expanses of low-contrast terrain.
- Monitor shadows cast by near objects such as landing gear or skid shadows during hover.
- Keep windscreen and door windows clean of dust and dirt.
- Survey flying area for areas of low contrast and definition,

particularly where terrain rises and falls.

NVG operations

- Operate according to the crawl-before-you-walk, walk-before-you-run philosophy, especially in an unfamiliar environment.
- Conduct detailed planning and mission briefings regardless of pilot experience.
- Establish all crewmember duties.
- Identify crew coordination requirements, especially during critical phases of mission.
- Remind crews that continuous scanning is a must and that the pilot on the controls must stay outside.
- Require that all crewmembers assist in obstacle clearance.
- Remind aircrews that airspeeds must be adjusted downward during low illumination and visibility conditions and in areas of little or no contrast (go low, go slow).

Wire strikes

- PIC—Conduct thorough hazard and obstacle briefing before each mission.
- Aircrews—
  - ❑ Conduct thorough, detailed mission planning as a crew.
  - ❑ Wire strikes are more likely when crew becomes disoriented.
  - ❑ Mark all known wires on hazard maps.
  - ❑ Ensure maximum crew coordination in searching out and calling out wires.
  - ❑ Go slow when you go low.
- Aviation safety officers—Promote wire strike prevention awareness in safety briefings.

Survival equipment

- Check for presence and condition of survival kit before each mission. Kit should contain at least the following:
  - ❑ Water (5 gallons), canned or in canteens.
  - ❑ Fabric shelter.
  - ❑ Rations for 5 days.
  - ❑ Waterproof matches.

- ❑ Compass.
- ❑ First-aid kit.
- ❑ Pocketknife (at least 2 blades).
- ❑ Emergency radio.
- ❑ Water purification tablets.
- ❑ Sunburn ointment.
- ❑ Day/night signal flares.
- ❑ Snakebite kit.
- ❑ Frying pan.
- ❑ Whistle.
- ❑ Headnet, insect.
- ❑ Signal mirror.
- ❑ Colored signaling panel.

High intensity radio transmission area (HIRTA)

- Mission planning should include consideration of potential effects of an electromagnetic environment.
- Report suspected instances of electromagnetic interference.
- Review classified HIRTA guidance information (CDRAVSCOM message, AMSAV-E, 091845Z Jan 89).

Helicopters

Brownout

- Ensure crews are familiar with procedures in aircraft operator's manual; chapter 2, FM 1-202: Environmental Flight; and TC 1-13, Hot Weather Flying Sense.
- As a minimum:

❑ *Taxiing*. Get helicopter airborne and through ETL as quickly as possible to minimize dirt and dust intake by engines and danger of brownout.

❑ *Takeoff*. Running takeoff is preferred for wheel-type helicopter. Otherwise, maximum performance takeoff is recommended.

❑ *Flight and descent*. Avoid flying through dust storms. Excessive dust and grit will cause damage to internal engine parts, excessive bearing wear, and erosion of rotor blades.

❑ *Landing*. Running landing when terrain permits with minimum touchdown roll. Approach to touchdown should be

made using approach angle greater than angle used for normal approaches. Approach angle should be compatible with available power. Be prepared to go around if ground contact is lost.

❑ *Doors and windows*. Keep closed during takeoff and landing to help prevent dirt from entering cockpit and cargo area.

Maintenance

- Keep aircraft clean.
- Wipe oil and grease off engine decks and cowling-covered parts.
- Make sure all filters and air cleaners are inspected and cleaned daily.
- Cover radios and receivers with dust covers when possible. Clean ventilating ports and channels to stop overheating.
- Blow dust and dirt out of instrument panels, switches, flight controls, and cables.
- Lubricate main and tail rotors after every flight or at least daily as per appropriate TM.
- Remove oil cooler compartment access panel daily, and clean caked dirt off fan's inner lip.
- Keep windows clean.
- Add oil and hydraulic fluid directly from original unopened containers to help stop dirt from getting into helicopter's lubrication and hydraulic systems. Dispose of partially used containers.
- Wipe off excess grease every time lubricant is applied. Grease attracts dust and dirt, forming a paste that grinds and wears lubricated parts.
- Inspect blades after every flight. High winds combined with dirt landing pads can sandblast paint off blades.

Pressure/density altitude; weight and balance; wind

- Compute density altitude (DA) before weight and balance.
- Always assume DA to be a little higher than calculated.
- Study DA tables in operator's manual.
- Remember that helicopter performance can be affected as

soon as 1 hour after sunrise because of rising temperature.

• Consider the effect wind direction has on aircraft control during takeoff and landing.

• Fog may be prevalent in low areas throughout the area of operations.

Forward arming and refueling points (FARP)

• Ensure fuel and ammunition handlers are familiar with FM 10-68 procedures.

• Look for and correct improper grounding points, deteriorated or leaking hoses, leaking nozzles, incorrect sampling procedures, improper storing or dumping of waste POL products, lack of personal equipment for refueling personnel, no water at refueling site, unserviceable fire extinguishers, and no controlled access into/out of refuel points.

• Keep gasoline drums covered and, where possible, maintain storage temperature below 120°F.

• Ensure fuel does not become contaminated by dirty nozzles and other unclean equipment.

• Consider positive control of air traffic and ground traffic around refueling sites to reduce potential of midair/ground collisions.

• Keep camouflage materials (netting/foliage) as far from rotor blade systems as possible to prevent FOD.

Warning: High-frequency radios will not be operated within 100 feet of aircraft being refueled.

• Require daily inspection of grounding/bonding systems.

• **Static electricity:** Be aware of fire hazard possibility from static electricity. Connecting the nozzle bonding wire before opening the fuel cap will prevent a static arc from occurring in the presence of fuel vapor and significantly reduce the fire hazard.

APU starting procedures

• Under normal operating conditions, start APU only when performing preflight cockpit equipment checks or during

parking and shutdown sequence, as specified in the operator's manual.

• As APU is not flight certified, do not start in flight or during ground taxi, except in emergency.

Visual scan

• Function as a total crew, exercising guidance in appropriate ATM.

• Do not stop scanning to channelize attention inside or outside aircraft. Scan stop of more than 3 seconds is risky. If pilot on controls must stop scanning, transfer controls; if pilot not on controls decides to stop scanning, announce decision.

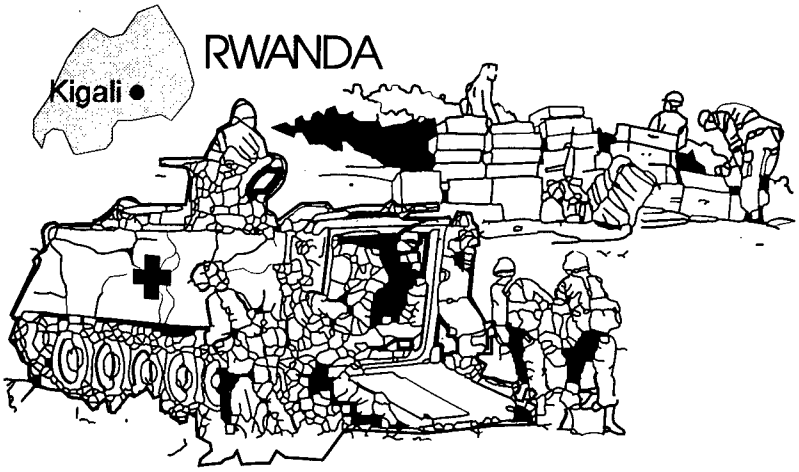
Foreign object damage

• Ensure that bivouac areas are clear of aircraft approach paths, landing pads, and departure paths to prevent loose items from being affected by rotor wash and injuring personnel or damaging aircraft.

• Require that FOD checks be performed following maintenance to reduce the possibility of loose items being ingested by aircraft engines.

• Ensure that approach/hover/departure is high enough not to affect loose debris in damaged areas. Avoid areas littered with items such as metal roofing sheets or plywood, which could become airborne and fly through the rotor system or injure personnel in the area.

• Recon unimproved landing and pickup zones for FOD prior to use.



Section V

Ground Operations

This section addresses areas of concern in ground operations. Listed under each area are actions leaders should take to reduce the hazards.

Vehicle operational threats

Threat: Troops ride outside passenger positions.

- Instruct troops to remain seated (with safety belts fastened when available).
- Do not overload vehicles.
- Select proper vehicles for transport.
- Keep riders off tailgate of moving truck.

Threat: Seatbelts are not used.

- Enforce requirements to wear seatbelts.
- PMO issue alert to patrols.

Threat: Tailgates and safety straps are not secured.

- Senior occupant check straps and gates before departure.
- Secure bulky items.
- Configure deuces and dump trucks properly for personnel.

Threat: Ground guides are not used.

- Reinforce requirement for ground guides.
- Assist oversize civilian vehicles in mixed traffic.

Threat: Trailers are not properly attached.

- Inspect trailers before departure.
- Match trailer to vehicle size.
- Lock pintles.
- Check air brake and light functions.

Threat: Vehicle antennas are raised while under way.

- Keep tiedowns in place when not communicating, particularly when operating around aircraft.
- Check for antenna ball tips.

Threat: Vehicle drivers speed.

- Minimize independent dispatch.
- Strengthen senior occupant authority.
- Coordinate convoy speeds with police escorts.

Threat: Drivers are not trained and licensed for vehicle.

- Licensing should be done at home station.
- Develop theater-unique driver-training program.

Threat: Driver fatigue.

- Set up sleep plans.
- Eliminate busy work.
- Keep soldiers from overcommitting to situations.
- Plan flexible movements for off hours and low-priority routes.

Threat: Improper vehicle marking.

- Get or make convoy signs.
- Check lights, including gum-balls.
- Place vehicle with USAREUR reflective designator in rear of convoy.
- Request hazmat placards through chain of command.
- Check with civil agencies for placards.
- Get advice before improvising hazmat placards.

Threat: Convoy dropouts lack escorts.

- Emphasize PMCS to reduce dropouts.
- Make sure delayed drivers have good maps and information.
- Arrange escorts with local police if possible.

Threat: Bridges are marked incorrectly or not at all.

- Perform route recon.
- Contact local authorities for information.
- Get assessment help from Army engineers.
- Don't assume marked weight classifications are valid.
- Look for visible damage or signs of undermining.
- Reroute around suspect bridges, and spread the word.
- Watch for improvised repairs and warning signs.

Threat: Bad road conditions.

- Plan routes to avoid likely obstacles.
- Warn lead vehicle drivers to probe water slowly.
- Mark hazards for following traffic.
- Assume all stream depths are unknown.
- Plan alternate return routes.
- Maintain probing speeds on hills and curves.

Vehicle maintenance operational threats

Threat: PMCS routines are disrupted.

- Reinforce need for frequent checks.
- Stress control of independent dispatches.

Threat: Road debris requires frequent tire changes.

- Instruct drivers to stick to cleared lanes.
- Bring adequate spares.

Threat: Units deploy without tire cages, hose extensions.

- Include tire cages in predeployment inspection.
- Locate civilian cages.
- Avoid creative field expedients.

Threat: Inadequate lighting.

- Assign generator setup to experienced personnel.
- Don't use field expedients around flammables.

Threat: Vehicles deploy without windshields.

- Assure drivers have tanker goggles.
- Restore windshields as soon as possible.

All vehicles

PMCS

- Stress that PMCS is especially critical.
- Stress that drivers must perform special requirements covered in the "Operating Under Unusual Conditions" section of their respective operators manual.
- Ensure that chock blocks are used as required.

Off-road driving

- Terrain: Mild to extreme.
- Roads: Few roads are paved.
- Provide instruction about tire pressure and hands-on training in gear selection.
- Ensure drivers refer to appropriate vehicle operators manual for "Operating Under Unusual Conditions."
- Ensure that wheeled-vehicle drivers receive hands-on training in driving in sand, mud, and rocky terrain to include the following:
  - ❑ Reduce tire pressure for soft soil conditions, and drive at low speed. Inflate tires to normal pressure as soon as situation permits. (Prolonged driving on partially deflated tires will overheat tires and break down sidewalls.)
  - ❑ Select a gear or range that will start vehicle with a minimum of clutch slippage and wheel spinning.
  - ❑ Maintain a steady, even rate of movement.
  - ❑ Avoid unnecessary gear shifting. Keep automatic transmissions in low range.
  - ❑ Brake gradually or allow vehicle to roll to halt. Stop on downhill slope when possible.
  - ❑ Cross shallow ditches by shifting into low gear or range

and proceeding slowly.

❑ Enter ditches obliquely so that one wheel leaves the ditch as the other wheel on the same axle enters it.

❑ Do not attempt to straddle large boulders; they will damage axles and other low parts of the vehicle.

❑ Drive slowly in rocky terrain, and carry an extra spare tire if one is available.

❑ Remove stones between dual tires as often as possible to prevent breaking sidewalls.

❑ Use low gear (or low range) to pull slowly out of mud.

❑ Increase traction in mud by placing boards, brush, or similar material under the wheels.

❑ When driving through mud, select a low gear, roll onto the soft area at a medium speed for the selected gear, and carefully maintain a steady throttle until reaching solid ground.

❑ FM 21-305 provides additional guidance.

- Ensure that tracked vehicle drivers receive hands-on training in driving in existing conditions.

Built-up areas/local driving

- Provide instruction in local driving customs and practices. (Accident experience shows local drivers to be very unpredictable, often showing complete disregard of traffic signs and signals, turning left from the right lane or right from the left lane, and making U-turns in intersections.)
- Avoid areas of high civilian-vehicle concentration.
- Stress need for constant alertness and to expect civilian vehicles to do the unexpected.
- Ensure all drivers are aware of flash flood dangers: frequency of rainstorms, low areas, effect on roads and traffic.

Speed

- Establish and enforce safe speed limits for various road and environmental conditions.

Safety belts

- Enforce the use of safety belts.

Driver selection

• Pair an experienced driver with an inexperienced one to provide supervision and hands-on training.

Rollovers

• Practice rollover crew drills.

• Instruct drivers on conditions that can lead to rollovers: steep slopes, ditches, loose sand, etc.

• Enforce use of safety belts by crew and passengers.

• Ensure equipment is secure to prevent injury from falling equipment or cargo.

• Enforce posted and briefed speed limits.

• Remind drivers to slow down in limited visibility, on rough terrain, and during inclement weather.

• Caution drivers to avoid steep slopes and narrow trails. (Leaders must also keep this in mind when planning vehicle moves.)

• Remind drivers to give special care to tire, track, and suspension checks.

• Caution drivers to drive at moderate speed and make wide turns at slow speed to maintain vehicle control (especially critical in off-road driving).

Backing

• Ensure drivers properly use ground guides (see section on ground guiding).

Passengers/cargo transport

• Supervise cargo loading to ensure load is secured and weight is correctly distributed (especially when traveling over off-road terrain).

• Enforce wear of safety belts and helmets.

• Use fixed seating in truck cargo beds.

• In cargo beds without fixed seating, ensure passengers remain seated within truck body.

Crew coordination

• Stress importance of maintaining crew communication.

• Remind drivers and track commanders to warn crews and

passengers when they are about to cross a ditch, climb an obstacle, or take any action likely to catch occupants off balance.

Convoys

Traffic control points

- Perform route reconnaissance and brief drivers.
- Establish traffic control points during route recon.

Speed

- Establish and enforce safe convoy and catch-up speeds for expected road and environmental conditions. Include in pre-march briefing.
- Set speeds based on personnel, training, terrain, environment, and equipment (see section on night vision devices on page 39).

Rear-end collisions

- Provide adequate driver rest before starting.
- Establish speed and following distance guidelines. Increase following distance in bad weather and darkness. Include in pre-march briefing.
- Establish procedures for vehicle stops and breakdowns to warn approaching vehicles in restricted-visibility conditions.

Loss of control/rollovers

- Use experienced drivers in difficult terrain.
- For off-road movements, when possible conduct a physical reconnaissance of the route to avoid the worst terrain hazards. Mark unavoidable hazards on strip map and include them in the pre-march briefing.
- Check loads to ensure cargo is correctly secured. Stress even load distribution, especially when traveling over off-road terrain.

Clearance

- Recon the route for bridges or underpasses that may be too low for large vehicles.

• Recon routes for mountain passes or any sharp turn that might require special control measures.

Materiel failure

• Have all drivers perform PMCS before departure, during halts, and after completion.

• During halts, in addition to normal during-operation PMCS, emphasize tire/track pad condition and security of loads.

• During operation, have drivers pay particular attention to air cleaner indicator and water and transmission gauges.

• Ensure operators know proper cool-down procedures for their vehicles. Procedures are spelled out in appropriate operators manuals.

• Ensure vehicle basic issue items, pioneer tools, highway warning devices, and fire extinguisher are present on every vehicle.

• Ensure that disabled vehicles are moved completely off the roadway.

Local driving practices

• Provide instruction in local driving customs and practices. Avoid areas of high civilian vehicle concentration. Stress staying alert and to expect civilian vehicles to do the unexpected. Include in pre-march briefing.

Passengers

• Enforce requirement to wear available safety belts and helmets.

• Use fixed seating in truck cargo beds.

• Ensure that tailgates and safety straps are secured.

General

• Do not place vehicles transporting troops, ammunition, or POL last in a serial or march unit.

• Ensure all prime movers and trailer brake systems are properly connected and fully operational.

• Reinforce braking and downhill driving procedures with all operators.

Combat soldiering

Parachuting

- Brief all jumpers on drop zone (DZ) conditions.
- Limit rucksack weight to jumper's capability; excess weight will increase the probability of a weak exit and a towed jumper.
- Ensure that jumpers who wear corrective lenses wear them while jumping.
- Review reserve parachute activation procedures and ensure jumpers know what method to use.
- Review procedures for jumping with weapons exposed.
- Ensure ONLY red cabin lights are used 30 minutes before and during night jumps. Use of white lights will destroy night vision.
- Rehearse actions on DZ.
- Review parachute landing fall techniques and emergency procedures.
- Conduct aircraft crash drills.
- Use door bundles for extra equipment and ammunition.
- Stress exit interval, door position, and correct exit procedures.
- Review crossloading plan.

Rappelling/fast rope

- Use trained rappellmaster.
- Conduct briefing with aircrew.
- Inspect all equipment.
- Keep rucksacks under 50 pounds.
- Require use of helmets and gloves.
- Prohibit cutting of ropes except in an emergency—and only after visual confirmation that rope is clear.

Landing zone selection

- When selecting helicopter landing sites, pick areas that minimize the amount of sand and dust that might be disturbed and that are clear of powerlines, trees, brush, or other obstacles. Mark unmovable obstacles.

Weapons

Handling

- Do not tolerate horseplay.
- Ensure weapons are kept on safe.
- Remind soldiers to consider weapons loaded at all times and to check chamber often.
- Instruct soldiers to load only on command or SOP.
- Remind soldiers to know their target and their allies. Train in target identification under "mirage" conditions.
- Control ammo.
- Highlight danger of "cookoffs."
- Rehearse immediate-action drills for misfire/weapons malfunction.
- Remind soldiers to clear for backblast when firing anti-armor weapons.
- Ensure that soldiers receive correct ammunition for the weapon system. Refer to the operator's manual when in doubt.

Maintenance

- Establish weapons lubrication policy.
- Require that weapons, ammo, and magazines be kept clean.
- Require that muzzles be covered to prevent clogging.
- Conduct headspace and timing in accordance with TM. Caution soldiers not to rely on memory, to always verify.

NBC operations

MOPP

- Increase WBGT by 10°F for operations in MOPP. Increase water consumption correspondingly.
- Practice drinking while wearing mask.
- Remind soldiers that command drinking policy is even more important when in MOPP.
- Plan additional time to conduct operations (up to 6 times longer). Rotate personnel more often.
- Allow personnel to loosen protective clothing as situation permits.

• Employ buddy system to check for heat injuries. Ensure leaders are included.

• Delegate tasks to subordinates to reduce stress and fatigue. (Experience shows that leaders are most likely to suffer adverse effects of operating in MOPP.)

M43 protective mask

• Do not expose blower or battery pack to temperatures above 160°F.

• Do not allow battery pack or blower to remain in contact with hot metal surfaces.

• Remind personnel that prong-type M17 mask inserts can cause injuries.

Night vision devices

Preparation for use

• Ensure soldiers get adequate rest and eat well-balanced meals.

• Advise soldiers to avoid use of tobacco, alcohol, and self-medication. (They impair night vision.)

• Remind users to avoid bright light, including sunlight, and
to wear sunglasses when outside.

Driving

• Warn drivers against overconfidence and to avoid normal tendency to overdrive capabilities of goggles.

• Remind users to continuously use scanning technique.

• Remind users that effectiveness is greatly reduced in dust, haze, fog, smoke, and rain. Slow down.

• Remind users to keep light sources outside the field of view of goggles.

Equipment damage

• Ensure personnel are properly trained in maintenance and use.

• Remind users to avoid pointing goggles into the wind if possible.

• Ensure that users remove all dust and dirt from goggles after use.

• Remind users to keep carrying case closed unless removing or replacing items.

• Remind users to protect optics from light sources, intense heat, direct sunlight, dust, and dirt.

Ammunition and explosives

General precautions

• Expose only the minimum number of people and amount of equipment necessary to ammunition and explosives.

• Handle ammunition carefully. Containers must not be tumbled, dropped, thrown, rolled, or dragged (unless designed for dragging).

• Make provisions to evaluate and, if necessary, segregate damaged ammunition.

• Coordinate with QM laundry to wash clothing with an antistatic additive to reduce static electricity.

• Don't use sparking metallic tools on explosives; take precautions to reduce static electricity discharge.

• Determine if your area of operations is susceptible to electrical storms and establish lightning protection procedures.

• Do not allow soldiers to collect dud rounds for souvenirs.

• Monitor suspension/restriction notices. Suspended lots should be visibly marked and physically separated from serviceable unit basic load (UBL).

• Do not remove ammunition from its packaging until you have to. Ammunition containers provide protection from hazards such as moisture and static electricity.

• Wear leather gloves when working with banding materials or wooden boxes.

• Keep the area within 50 feet of ammunition clear of vegetation, refuse, empty packing materials, and other hazards that could cause a fire to spread to the ammunition.

Unexploded ordnance (UXO)

• Brief soldiers on dangers of UXO.

• Establish procedures for marking and handling UXO.

• Do not allow soldiers to collect dud rounds, bomblets, or suspected UXO for souvenirs.

• Have NCOs perform shakedown inspections while in cantonment areas.

• Constantly remind personnel that UXO can kill.

• Be alert while crossing terrain and areas where prior training may have taken place.

• Remind soldiers: If you don't know what it is, don't mess with it!

Fire precautions

• Keep all flammable materials and all flame- or spark-producing devices away from ammunition and explosives. This includes matches, lighted cigarettes, petroleum products, and vehicles with leaking fluids.

• Ensure fire extinguishers are present wherever ammunition is handled, stored, or transported.

• In case of fire, evacuate the area to a distance of at least 400 meters and take cover.

• Clearly post "Add no water" signs to ammunition-containing materials (such as thermite or triethyl aluminum (TEA/TPA)) that react violently with water. These fires may be smothered with sand or dirt.

Loading precautions

• Ensure vehicle brakes are set, engine is turned off, and at least one wheel is chocked during loading and unloading.

• Ensure ammunition weight is evenly distributed and the load is secured to prevent movement.

• Ensure vehicles and trailers loaded with ammunition are parked at least 50 feet from vehicles and trailers loaded with flammable liquids.

• Ensure tailgates and safety straps are secured.

Storage precautions

• Protect ammunition, particularly unpackaged ammunition, from direct sun. However, tarpaulins or other covers placed directly on ammunition could cause

deterioration, so a ventilation space must be provided.

• Disperse ammunition to minimize loss in the event of fire, accidental explosion, or enemy action.

• Conform to quantity-distance standards for storage of ammunition and explosives.

• Ensure that ammunition of unknown origin and captured ammunition is examined, evaluated, and classified by qualified personnel and stored in a designated collection point.

• When storing ammunition, use sand dunes, barriers, buildings, and so forth to prevent propagation and to protect personnel and materiel from the effects of an explosion.

Pyrotechnics

• Ensure your soldiers know that simulator flash powder ignites instantly and explosively and that simulators should not be exposed to intense heat and direct sunlight. Remind them never to cut open or hand-ignite these devices and to mark duds and seek EOD guidance for handling and disposal.

• Remind soldiers, while training, not to throw/detonate simulators, flares, or smoke devices near troops, tents, vehicles, or other flammable/combustible materials.

• Remind soldiers to roll down sleeves and wear gloves and helmets when using simulators.

Maintenance

Track checks

• Ensure proper PMCS is conducted.

• Ensure that vehicle suspension is checked for excessive wear and loose, broken, or missing bolts before, during, and after operation.

• Ensure that tracks are lubed often to flush out sand-grease mixture.

Tire checks

• Ensure that tires are checked often for cuts and wear.

• Remind drivers to check for rocks between duals and to

check tire pressure often.

• Be aware that rough ground shortens the life of tires.

Tire repair

• Insist that mechanics always use a tire cage.

• Remind mechanics to use proper tools, to keep hands out of cage while inflating, and to use an extension.

• Remind mechanics to use the buddy system when lifting, removing, and installing large tires.

Batteries

• Remind personnel to keep air vents on caps clean to allow gas release and avoid pressure buildup.

• Ensure that personnel check levels often.

• Ensure personnel adjust battery electrolyte levels during the day. (When batteries cool, levels will lower slightly and overflow will be avoided.)

• Require the use of slave cables. Only as a last resort should jumper cables be used. Remind personnel to beware of sparks as jumper cables are attached around the battery's gaseous vapors.

• Ensure mechanics adjust voltage regulators to lowest setting possible to avoid overcharging.

• Require use of face shields, goggles, and aprons when servicing batteries.

Recovery operations

• Remind recovery personnel to use a braking vehicle when required by TM and to always use correct hookup procedures.

• Ensure that all vehicles are equipped for self-recovery as appropriate (tow ropes/cables and rope ladders, pierced steel planking or other traction material to place under tires).

• Caution soldiers to keep hands and clothing at least 5 feet from winch when rewinding cable after recovery operations.

• Enforce safe towing speeds.

• Match driver to mission.

• Fabricate ground support devices for outrigger support in soft ground.

Eye protection

- Require goggles for work under vehicles.
- Require that the right tool be used for every job.

POL

- Remind personnel to use extreme care when changing hot lubricants (they can burn).
- Take care to prevent contamination of POL.

Radiators/coolant

- Remind personnel to use caution when removing radiator caps from hot vehicles and to check radiator fluids often to avoid overheating. (Use hand to remove cap only if cool to touch. Turn cap slowly to release pressure.)
- Remind personnel to keep radiators and airflow areas clean and free of debris to avoid rupture of radiators.
- Require that radiator caps be tested often. (Caps control radiator pressure.)

Grounding

- Ensure that portable electric power tools and power generation equipment are properly grounded (see page 45 for section on grounding).

Communications

Antennas

- Remind personnel that, when erecting RC-292/OE254 antennas, they must stay *twice the distance from powerlines as the length of the antenna.*
- Stress that soldiers have been killed by falling antenna head sections.
- Require that personnel wear eye protection, head protection, and gloves when erecting antennas.
- Allow no substitutes for antenna mast sections (camouflage poles have been a fatal alternative).
- If, for any reason, an assembled antenna head must be left on the ground, ensure it is guarded to prevent others from walking into it. Tip protectors are a must.

Power lines

• Identify power lines in operational areas to *all soldiers.*

• Tie down antennas when in areas of power lines (antenna tip should be no lower than 7 feet to preclude eye injuries). Use tip protectors at all times.

• Warn soldiers never to throw WD1 over power lines.

Electrical storms

• If possible, do not operate radios, telephones, or switchboards during electrical storms.

• Disconnect electrical equipment from power sources and antennas if the situation permits.

• If equipment *must* be used, converse as little as possible. Return call after storm.

Grounding

• Ensure that *all* electrical equipment is grounded (see section below).

Grounding

General

• Remind personnel that extra care must be given to preventing static electricity.

• Ensure that personnel know that desert soil requires special grounding procedures. (In accordance with FM 20-31, a mixture of 5 pounds of salt with 5 gallons of water buried with the grounding rod improves grounding conditions.)

• Instruct personnel to dig/drive ground rods to a depth of 6 feet.

• Remind personnel to keep soil moist around grounding rods to increase conductivity and to keep ground rods, straps, and connections free of paint or oils.

Fuel handling

General

• Establish a waste POL point, and guard against pilferage.

Grounding and bonding

- Ensure proper grounding and bonding procedures are always used (see grounding section above).
- Remind personnel to ground themselves by touching a large metal object before handling fuel hoses and nozzles.
- Ensure that grounding and bonding equipment is inspected regularly.

Fuel system supply point

- Remind personnel to—
  - ❑ Not fill collapsible bags to full capacity (allow for expansion).
  - ❑ Leave hose line valves slightly open to allow for fuel expansion into tankage.
  - ❑ Keep pump engines clean.

Refueling operation

- Ensure proper bonding and grounding procedures are used.
- Remind personnel to—
  - ❑ Not fill vehicles to full capacity (allow for expansion).
  - ❑ Keep tank truck hatches open during refueling to allow vapors to escape.
  - ❑ Stay on the windward side to prevent being overcome by fuel vapors.
  - ❑ Close hatches immediately after refueling.
  - ❑ Use bottom load procedures when possible. (If top loading is used, use extreme caution and start the refueling procedure at a slow rate until the level of fuel has covered the hose. Thereafter, increase the flow rate slowly.)
  - ❑ Perform weekly fuel sample checks.

Protective clothing and equipment

- Remind personnel not to wear nylon clothing. (Nylon will build up electrostatic charges.)
- Remind personnel to wear fuel-resistant or rubber gloves and protective clothing to keep fuel off the skin.
- Coordinate with QM laundry to wash clothing with an antistatic additive to reduce static electricity.

Bivouac

Sleeping areas

• Establish a designated sleeping area. If situation permits, mark perimeter with engineer tape or chem lights.

• Post unit perimeter security personnel equipped with lights for signaling. Ensure they have been thoroughly briefed on their duties and responsibilities.

• Ensure vehicles are not parked where they can roll toward sleeping personnel or on an incline without chocks.

• Brief all soldiers on correct driving/sleeping procedures during hours of darkness.

Dismount points

• Establish dismount points beyond which vehicles may not move without ground guides.

Ground guiding

• Require all vehicles to use ground guides, especially during periods of darkness and reduced visibility.

• Require tracked vehicles to use two ground guides when moving within or through an assembly area at any time.

Tents

• Ensure that all personnel fueling/operating tent stoves are properly trained.

• Ensure that stovepipes extend above the top of tents (spark arrestor is required).

• Ensure that stoves are not operated at full capacity.

• Ensure operable fire extinguishers are accessible and that operators are assigned and knowledgeable.

• Require that electrical circuits be routinely inspected for possible overload condition.

• Ensure that personnel prevent stove fuel from leaking and require immediate cleanup of any spills.

• Establish and enforce smoking areas.

• Use tent liners as added insulation from heat and cold.

• If rebar is used to stake tents, cover the stakes to protect personnel from being cut on the sharp edges.

Weather

- Ensure sufficient anchorage is provided for tents in high-wind conditions.
- Beward of potential for flash flooding.

Mess operations

Sanitation

- Ensure all food waste is properly disposed of. If buried, do so daily and at least 30 meters from food preparation areas.
- Ensure food preparation area is at least 100 meters from latrines and 50 meters from incinerators.
- Ensure food is protected from contamination.
- Monitor food handlers and other soldiers to ensure sanitation standards are maintained.
- Caution soldiers to rehydrate MRE items.

Fire/explosion

- Ensure kitchen fuel storage area is at least 15 meters from working area and is marked as a hazard area.
- Ensure operable fire extinguishers are accessible (with designated operators) in mess-tent area and at stove-lighting and fuel-storage areas.
- Ensure that all personnel who refuel or operate stoves, immersion heaters, and burners are properly trained.
- Make operators aware that increased heat will add pressure to fuel tanks and fuel cans and that particular attention should be given M2 burners.
- Keep mess-tent exits clear of obstructions.

Cuts/burns

- Remind personnel to—
  - ❑ Keep knives sharp, and use the right knife for the job.
  - ❑ Not use knives or other sharp implements to open tray packs (use modified can opener and P38).
  - ❑ Tilt heated tray packs and cans to right or left when opening to prevent burns from squirting hot juices.

Materiel handling

Lift/carry procedures

- Enforce use of correct techniques—
  - ❑ Never carry a load heavier than can be managed with ease
  - ❑ When in doubt, get assistance.
  - ❑ Bend from hips and knees, not just the waist.
  - ❑ Carry heavy objects close to body.
  - ❑ Avoid sudden movements; move slowly and deliberately.
  - ❑ Do not carry unbalanced loads.

Slips, trips, and falls

- Supervise operations.
- Ensure that areas are clear of obstructions and hazards, and remind personnel to use care when vision is obstructed by objects being carried.
- Caution personnel not to jump or step from cargo vehicles while carrying loads; tell them to use a ramp or get help.
- Remind personnel to use extreme care when carrying loads over rough surfaces.

Ground guiding

General

- Train drivers in the correct use of ground guides and all personnel in how to perform as ground guides.
- Stress importance of ground guides when traveling cross country during periods of limited visibility.
- Remind drivers to always use one or more ground guides while backing.
- Equip ground guides with suitable lights during periods of limited visibility/darkness.
- Caution personnel that soft ground can make ground guiding difficult.

Construction

Equipment operation

- Remind operators that construction equipment may be very unstable off road.

- Ensure operators and supervisors check outriggers for stability.
- Ensure safety belts are worn at all times when operating equipment.
- Ensure rollover protection systems are installed, and erect sun umbrellas on slow-speed equipment such as rollers and compactors.
- Establish operator/crew equipment rollover drills.
- Ensure ground guides are used at construction sites and in congested areas and bivouac locations.
- Ensure all prime movers and trailer brake systems are fully operational on equipment haulers and other M915 series vehicles.
- Rehearse braking and downhill driving procedures with all operators.
- Appoint a site safety supervisor for large earthwork or building construction sites.
- Ensure helmets or hardhats are worn on construction sites.
- Control vehicle, pedestrian, and troop access to sites.
- When excavating, ensure excavation walls are reinforced to prevent cave-ins.
- Ensure all personnel on the site know what to do in case of flash floods.
- Ensure all electrical equipment is grounded, and ground and bond when transferring fuel (see grounding section on page 45).
- Ensure safety equipment (goggles, gloves, welding masks, aprons, dust respirators, etc.) is available and used.
- Ensure personnel do not shortcut safety procedures due to heat discomfort.
- Establish policies and procedures for recovery of equipment.
- Protect hydraulics, fuel, and optics from dust and dirt contamination.
- Ensure gloves are worn when working with metal tools and materials exposed to heat from the sun.
- Remind personnel to—
  - ❑ Check wire rope rigging and bolt torque specifications.

❑ Keep sawdust cleaned up in carpentry areas.

❑ Protect flammables (flashpoint less than 100°F) and combustibles (flashpoint 100°F or greater) from extreme heat exposure.

• Emphasize need for spill control. Remind personnel to remove contaminated soil from operational areas at once because of fire and vapor hazards.

Combat engineer

Demolitions

• Ensure proper procedures and tools are used when working with demolitions (i.e., crimper, flak jacket, helmet, and nonsparking tools).

• Ensure that static electric charges are checked for and grounded and that anti-static laundry additives, anti-static sprays, and individual grounding are used on large metal surfaces/vehicles.

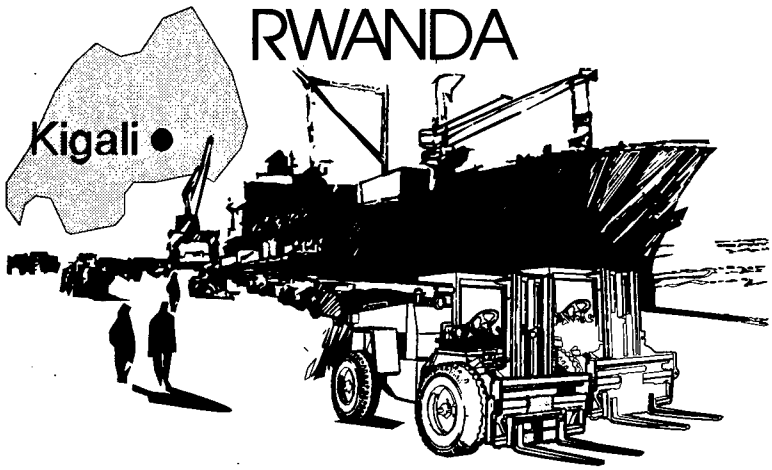
• Ensure demolitions are stored properly.

• When detonating explosives, make sure survivable safe distance or cover is used.

• Ensure that explosives are kept away from food and eyes and that personnel clean hands after handling explosives.

Wire obstacles

• Ensure proper equipment is used and proper clothing is worn (barbed-wire gloves, sleeves rolled down) when constructing wire obstacles.



Section VI

Port Operations

Before-departure preparations

Proper before-departure preparation of both troops and equipment is essential. The following lessons learned from other deployments show how the pressure to ship can overwhelm Army shipping performance and safety standards. Sound planning can prevent similar occurrences.

Threat: Provision is not made for increased fire protection.

- Talk to local fire departments for coverage.
- Optimize use of available extinguishers.
- Stress prevention.

Threat: Unlicensed drivers are assigned to materiel-handling equipment.

- Find trained and certified personnel.
- Arrange training for long-term operations.

Threat: Soldiers are not familiar with shipboard hazards.

- Have Navy/MTMC personnel provide briefings.

- Arrange familiarization tour if time permits.

Threat: Unfamiliar personnel work near dock and deck edges.
- Mark no-go zone on docks.
- Keep unsupervised personnel away from operations.

Threat: Borrowed manpower lacks hardhats/foot protection.
- Replace kevlar with ANSI hardhats if possible.
- Don't use kevlar for electrical work.
- Scour the Task Force and normal supply systems.

Threat: Soldiers do not understand Navy/Marine instructions, signals, and alarms.
- Arrange short briefings by supervisors/safety officers.

Threat: Lights and master switches of embarked vehicles are left on.
- Inspect vehicles.

Threat: Internal shipboard ramps offer poor traction.
- Instruct troops to wear best boots.
- Minimize one-man loads.
- Avoid running.

Threat: Improperly slingloaded vehicles are damaged.
- Attach slings to marked points.
- Record damage for adjustment.

Threat: Improperly slingloaded vehicles strike personnel.
- Keep personnel from under suspended loads.

Threat: Hasty slingloads come apart.
- Inspect rigging procedures throughout a shift.
- Inspect lifts of hazardous or high-cost material.
- Establish a sustainable and controlled work pace.

- Keep troops away from suspended loads.

Threat: Carbon monoxide builds up in vehicle holds.
- Coordinate ventilation with ship's crew.
- Minimize use of engines.
- Keep time spent in holds to minimum necessary.

Threat: Ship ramps and hatches lack guardrails.
- Warn troops to stay clear of edges.
- Stay off moving ramps.
- Be especially careful when the ship is under way.

Threat: Heavy equipment drives through tight doors and hatches.
- Use lights as directed.
- Use ground guides in tight spots.
- Put only experienced drivers in heavy vehicles.
- Report any contact with water-tight doors.

Threat: Docks don't have waterside personnel or vehicle barriers.
- Mark no-go zone on docks.
- Keep unsupervised personnel away from operations.
- Set up traffic lanes with cones or tape.

Threat: Drivers mill around the dock after dropping vehicles.
- Arrange frequent transportation from the dock.
- Establish a personnel holding area with activities.
- Don't let drivers hole up in vehicles, conexes, etc.
- Don't do paperwork in active dock area.

Threat: Drivers cannot see edges of rail flatcars.

- Enforce the use of ground guides (one or more) and keep one railcar distance from the vehicle. A guide should never walk backwards on a railcar.
- A guide should mount the previously loaded vehicle to prevent being crushed between the vehicles.

Threat: Heavy equipment extends beyond edges of railcars.

• When loading tracked vehicles or other heavy equipment onto flatcars, be sure to center it on the flatcar. The overhang on each side of the flatcar must be equal to avoid rail clearance difficulties (a 1-inch variation is usually allowed).

Threat: Vehicles are vulnerable to en route damage.

• Carry removable parts in vehicles by banding; band should be at least 3/4-inch by 0.20-inch.

Threat: Wire rope causes lacerations.

• Leather or leather-palm work gloves must be worn by persons loading railcars. The gloves may be included in the tool kit or issued by the unit supply section.

Preparation checklist

Use the following checklist to prepare for deployment:

• Start each day with a safety briefing to combat mission-itis and establish safety awareness.

• Establish a vehicle loading plan for sea shipment. Make sure nested vehicles (those carried in the backs of other vehicles) are included in the load plan. Include nested vehicles and blocking and bracing material requirements for all general cargo.

• Do not overgross prime mover carrying a nested vehicle. Make sure AUEL reflects the prime carrier and its nested vehicle or built-up actual height, length, and weight.

• Always block, brace, and tie down both nested vehicles and general cargo.

• Make sure nested vehicles have all lifting shackles in place in case they must be de-nested at the port.

• Inspect shackle support and supporting vehicle structure to make sure it is in good shape and that welds on shackle bracket are sound.

• Check each vehicle for condition of all lifting shackles, proper size of shackle, and proper size of shackle pin and cotter key.

• Always carry extra shackles for unit vehicles. (Shackles often disappear, and, without shackles, the vehicle may not be shipped.)

• Identify lifting shackles by painting the word "LIFT" next to them. Paint "TIEDOWN ONLY" next to tiedown shackles.

• Establish ammunition turn-in procedures and enforce penalties for violations.

• Turn in all ammo and munitions.

• Check each vehicle for loose rounds or pyrotechnics and for munitions tucked into storage compartments.

• Check pack pockets and gear pockets for loose rounds; turn them all in.

• Inspect unit gear to ensure no ammunition or other explosives are inadvertently packed away.

• Establish standard for inspections and retention of souvenirs.

• Check for critters in unit gear. Kill them.

• Identify "sensitive class" unit cargo and make sure AUEL reflects this status.

• Identify hazardous classes of cargo, and eliminate compatibility problems. Make sure unit AUEL accurately reflects which vehicles contain sensitive or hazardous cargo.

• Do not leave loose items in vehicle cabs. During a long, rough sea voyage, items could beat themselves and the inside of the vehicle to pieces.

• Be mindful that your vehicle may be loaded on deck and not down in a dry hold. The best way to check your load plan is to ask yourself, "If this truck were under a constant stream of sea water, would my load plan still be okay?"

• Block and brace equipment in the back of trucks to the maximum extent possible. Ship ramps sometimes exceed 45 degrees. Loose gear will tumble out.

• Tie down, block, and brace all cargo. A sea voyage is twice as rough as a road march; so don't pack for a road march.

• Use plastic to wrap radios in racks located inside vehicles and tracks.

• Adjust vehicle fuel loads so that vehicles arrive at port with tanks no more than three-quarters full. Always check

with the departure port Army terminal unit for the latest in-country standards for fuel tank levels and 5-gallon fuel-can levels. Drain fuel from generator sets before packing.

• If fuel tankers must be purged, make sure that all hoses are also drained.

• Do not drain POL tanks and hoses onto ground. Use proper fuel drain cans and dispose of drainings per unit SOP.

• Ensure that vehicles containing compressed gas cylinders (other than a fire extinguisher) are placarded on both sides of the vehicle with standard hazardous cargo placards (available from division/corps transportation officer).

• Remove oxygen and acetylene cylinders from wreckers and maintenance vehicles. Build bottle racks in a trailer, and secure all battalion acetylene bottles in the racks. *CAUTION:* Do not overgross the trailer. Stencil unit designation on each bottle. Properly placard the trailer.

• Make sure gas cylinder bottles have caps and that caps are secured.

• Inspect all vehicles for fuel, oil, and other leaks. Correct them.

• Ensure that any vehicle with a brake problem has a big steering wheel placard stating "CAUTION, NO BRAKES. DO NOT DRIVE. MOVE WITH TOW BAR ONLY."

• At the start of each day, go over standard ground-guide safety procedures and hand and arm signals. Stress ground guide use in the motor pool and vehicle preparation areas.

• Ensure drinking water is available in vehicle preparation areas.

Movement to port

Movement liaison team

Experience during deployment shows that the transition from field to port is more effectively accomplished if a liaison team is created to perform the following functions:

• Ensure the safe and timely processing of unit assets from field assembly areas through marshalling areas to the port

in accordance with the port-call message. Allow for adequate driver rest.

- Set the tone for the move by emphasizing the commander's safety standards at each phase of the movement sequence.
- Perform risk assessment of movement operations, and present command group with options to eliminate movement to port risks.
- Provide a single point of contact for all safety and operational questions concerning equipment preparation standards for sea shipment.
- Maintain liaison with port operating elements regarding equipment preparation, Customs, Department of Agriculture standards, and the port-call message.
- Resolve movement to port problems before departure to port.
- Provide a seaport element to make final vehicle shipment decisions; for example, with one space left on the ship, do you send the A Company or the B Company vehicle?
- Keep the command group and participating units informed.
- Establish controlled environments in which soldiers are cared for and accounted for from start point through their time at the seaport of debarkation (SPOD).
- Maintain unit integrity of personnel at SPOD.
- Organize maintenance assets to assist Port Support Activity (PSA) in fixing vehicles in the marshalling and port areas to ensure serviceability and readiness for sea shipment.

The movement liaison team should consist of a team leader, an assistant team leader, an NCOIC, and an administrative NCO.

The liaison team leader should be located at the assembly area during vehicle preparation and at the port during the movement to port phase. The liaison team should develop a marshalling area plan that covers—

- Receiving convoys.
- Refueling and/or defueling vehicles to Coast Guard limit. Arrange for excess fuel storage.

• Performing unit/direct support maintenance before staging.

• Providing final technical inspection to ensure that all vehicles are ready for sea shipment.

• Pre-staging vehicles by unit or by type.

• Messing and sleeping areas as required.

• Latrine facilities.

• Administrative support.

• Personnel control so the area does not become a giant parts/supply opportunity.

• Quick spot-check by port personnel of vehicle preparation and LOGMARS labels to make sure that if any last-minute problems are found, they can be corrected in the assembly or marshalling area.

Convoy checklists

Following are detailed checklists that commanders, liaison team members, convoy planners, and unit safety personnel can use to ensure that convoys to the seaport of debarkation are professionally and safely planned.

Route selection

Ask the convoy commander or convoy planner these questions.

• Has map reconnaissance been completed?

• Has a physical reconnaissance been made of the entire route?

• Can all vehicles clear bridges, underpasses, tunnels, and other clearance and weight limits? If not, have alternate routes been selected?

• Can all vehicles maintain minimum speed limits? If not, have alternate routes been selected?

• Have urban or potentially congested areas been identified?

• To avoid congestion, have alternate routes been selected?

• Has convoy movement been planned to avoid peak traffic periods?

• Have alternate routes been selected for vehicles transporting oxygen, acetylene, or other compressed gases?

- Have strip maps of the entire route been prepared?
- Does each convoy vehicle have a strip map?
- Have traffic control points been established at hazardous locations?

Start and release points

Ask the convoy commander or convoy planner at battalion level these questions.

- Is adequate space available for vehicle organization and lineup at start point?
- Is sufficient space available for maneuvering of vehicles, sequential lineup of vehicles, and march units and serials?
- Has arrival time at release point been established?
- Is adequate space available for safe vehicle release?

Controlled-access highways

If convoy movement will take place on controlled-access highways (those where entry and exit is permitted only at specific points), ask the convoy commander or convoy planner these questions.

- Have halt areas been identified along the route?
- Has a 15-minute halt been scheduled after the first hour, and 10-minute halts every 2 hours thereafter?
- Are all halts planned in designated rest areas?
- Have all halt areas been physically reconned to ensure sufficient capacity?
- Are halt areas shown on strip maps?
- Are halts scheduled to avoid overloading of halt areas?
- Do areas for meal halts contain the following?
  - ❑ Sufficient areas for cooking and eating?
  - ❑ Waste disposal facilities?
  - ❑ Latrines?
- Do bivouac sites contain the following?
  - ❑ Sufficient area for cooking, eating, and sleeping?
  - ❑ Waste disposal facilities?
  - ❑ Latrines?
  - ❑ Area for vehicle maintenance?
  - ❑ Security for cargo?

Conventional highways

Ask the convoy commander or convoy planner these questions.

- Have halt areas been identified along the route?
- Has a 15-minute halt been scheduled after the first hour, and 10-minute halts every 2 hours thereafter?
- Are halt times adjusted to permit halts at safe locations?
  - ❑ Location is away from urban or heavily congested areas.
  - ❑ Terrain permits vehicles to completely clear highway traffic lanes.
  - ❑ Location avoids curves or reverse sides of hills (blind spots from approaching vehicles).
  - ❑ Location permits minimum of 3 feet between parked vehicles.
- Are halt areas shown on strip maps?

Convoy organization

Ask the convoy commander or convoy planner these questions.

- Are convoys of more than 20 vehicles separated into serials?
- Are serials divided into march units if required?
- Is convoy element size based on capacity of halt/bivouac areas?
- Have the following personnel been designated and briefed?
  - ❑ Commanders for each serial and march unit.
  - ❑ Pace setter.
  - ❑ Trail party.
  - ❑ Claims officer.
  - ❑ Drivers and assistant drivers.
- Are vehicles transporting troops not the last vehicle in a serial or march unit?
- Are empty vehicles or those carrying general cargo used as buffers (i.e., last vehicle in convoy)?
- Are recovery and medical vehicles near the rear of the convoy?
- Is the convoy organized initially with 5 minutes between march units and 10 minutes between serials?

- Have adjustments to time gaps been identified and planned for?
- Are convoy and convoy element commanders positioned for best convoy control?
- Has convoy operation during periods of darkness been avoided?
- Are the following proper vehicle intervals planned?
  - ❑ Controlled access highway: 220 yards.
  - ❑ Rural conventional highway: 150 yards.
  - ❑ Urban conventional highway: 50 yards.
- Does each driver have a strip map?
- Is the convoy commander checklist completed?

Convoy ID and communications

Ask the convoy commander or convoy planner these questions.

- Are lead, rear, and element commander vehicles correctly identified?
- Are flags and signs correctly mounted on each vehicle?
- Is each convoy identified by a convoy clearance number?
- Has method of communication been decided?
- Has radio equipment (ideally, 2-way radio in first and last vehicle of each serial and unit) been checked and assigned to vehicles?
- Have signal operating instructions been provided to vehicles with radios and the liaison team?
- Have personnel been briefed on visual and audio signals?
- Have road signs and messages been constructed and placed as required?

Logistical support

Ask the convoy commander or convoy planner these questions.

- Are medical personnel scheduled and posted in rear of convoy?
- Are sufficient food and mess personnel and facilities available?
- Do all personnel have proper clothing and equipment?
- Has weather briefing been obtained for duration of convoy operation?

• Have provisions been made for obtaining weather updates?

• Is special equipment available based on weather requirements?

• Have weather effects on halts, meals, and bivouacs been determined and planned for?

Convoy personnel briefing

Ask **ONLY** the convoy commander whether leaders have given drivers the following instructions.

• Permit emergency halts only on roadside of controlled access highways.

• Permit only guards and maintenance personnel on traffic side of convoy during halts on conventional highways.

• Drivers and assistant drivers perform vehicle operator maintenance and check cargo security at every stop.

• Have guards stand 50 yards behind departing convoy to warn traffic on conventional highways.

• Assistant drivers will remain awake *and* alert.

• Reflectors and warning devices must be in place before beginning maintenance.

• Warning lights are used during periods of darkness or low visibility.

• Convoy begins only at convoy commander's signal.

• In case of accident, main column does not stop to provide assistance. Next following vehicle provides immediate assistance to accident vehicle.

• If an accident occurs to vehicle ahead, make maximum effort to clear traffic lanes.

• First officer or NCO at accident scene takes charge.

Refueling and maintenance halts

Ask the convoy planner these questions.

• Are sufficient supplies of diesel, mogas, and oil available for refueling?

• Are refueling halts planned for bivouacs?

• If not, is refueling planned for noon meal halt?

• Have vehicle operator maintenance checks been scheduled for every halt? Who inspects the drivers for signs of fatigue? What is the plan for driver changes?

• Are sufficient maintenance vehicles and equipment

available in rear of convoy?

- Are spare vehicles available for emergencies?
- Are all vehicle refuelers properly equipped and trained?

Vehicle preparation

Ask the convoy planner these questions.

- Have participating units been notified as much in advance as possible?
- Have all vehicles been inspected in vehicle assembly area?
- Have all spot corrections been made on vehicles?
- Does the loading and unloading plan include—
  - ❑ Designation of persons to execute plan?
  - ❑ Times and locations for loading and unloading?
  - ❑ Orders not to load troops in vehicles with motor fuel or hazardous cargo?

Driver preparation

Ask the unit or convoy commander these questions.

- Are all drivers qualified in assigned vehicles?
- Are drivers and assistant drivers assigned to each vehicle?
- Do all drivers have government drivers license OF 346?
- If not, have arrangements been made to test drivers or obtain alternate drivers?
- Are experienced drivers being used to the maximum extent possible?
- If not, are less-experienced drivers scheduled for training?
- Have drivers and assistant drivers been scheduled to split driving periods?
- Have all drivers received adequate rest prior to departure?

General precautions and procedures

Check these items yourself or ask the convoy commander.

- Are warning lights on first and last vehicle?
- Is a basic convoy warning kit in each vehicle?
- Are fire extinguishers and first aid kits in vehicles?
- Are vehicles carrying hazardous material marked?
- Do road guards have safety warning equipment?
- Are maintenance, wrecker, and recovery vehicles marked?
- Are accident procedures for the convoy established, to include—

❑ Trail officer designated to supervise care of injured and disposition of damaged vehicles?

❑ Notification of convoy commander, safety officer, and civilian police of accidents?

❑ Reporting of accidents IAW AR 385-40?

Arrival at port

Seaports are traditionally busy, congested, and confusing places. As the unit's vehicles arrive at the seaport, port personnel will give them a quick visual inspection to identify those with obvious problems. The LOGMARS label will be scanned, and all hazardous and sensitive cargo will be separated out of the main vehicle flow and sent to hazardous and sensitive vehicle staging areas. The remaining vehicles will be sent to other vehicle staging areas, where port personnel will again check vehicles and scan LOGMARS labels. Drivers and assistant drivers will be sent out of the staging areas to an assembly area for transport off terminal.

It is important that vehicles arrive precisely at the time specified in the port-call message and that everyone knows what to do upon arrival. The following checklists should help.

Leader checklist

• Carry enough water for your troops. Estimate one day on terminal, although actual time should be less.

• Explain the unit's terminal control plan to the driving and supervisory teams, to include—

❑ Where drivers and other unit personnel should assemble after parking their vehicles.

❑ Water point location.

❑ Latrine locations.

❑ Trashcan locations for MRE packages, etc.

• Stress unit integrity, NCO control, "don't wander around" philosophy.

• Unit key control officer must make prior coordination with port operators on availability and location of key

control NCO/officer. If possible, get a radio from Transportation Terminal Unit to ensure common communications and quick response by key control team.

- Explain how troops will depart the terminal and when and where they will be transported.
- Have a final check team go through the unit's vehicles after all the troops are assembled to check for mistakes, oversights, items left behind, shackles, lights or radios left on, etc.
- Before departing the terminal, perform a rollcall accountability check.
- Allow only essential personnel to enter staging areas while staging areas are filling.
- Do not allow drivers to fill out forms in vehicle staging areas during in-flow of vehicles. Doing so keeps drivers and assistant drivers in these areas while port personnel are trying to flow cargo rapidly into the same area. This mass of troops presents both a safety and a control problem.
- Do not plan to do nesting at the port. Any nesting should be accomplished at the assembly area in the field or at the marshalling area.
- Milvans and conexes must be certified as either hazardous or nonhazardous. This is usually done at the pack-out in the assembly area, where the certifications are put on the conexes and milvans. En route to the port, the certifications sometimes blow off. So, have the unit transportation officer/NCO at port to replace certificates. Otherwise, port personnel will have to open the conex/milvan to determine its classification.
- Personnel who will go aboard the ship during the load-out will need the following equipment:
  - ❑ Pre-boarding ship safety briefing
  - ❑ Helmet or hardhat
  - ❑ Hearing protection (earmuffs or earplugs)
  - ❑ Canteen

Driver checklist

- Keep an alert heads-up focus.
- Turn on driving lights in terminal.

• Use ground guide for all tracked vehicles and when backing vehicles 2½ tons and larger and any other vehicles in which visibility dictates the need. Ground guides should not walk backwards when guiding any vehicle.

• Keep proper distances between vehicles.

• Keep vehicles free from hanging materials such as chains or ropes that could snag on a cleat or tiedown fitting and yank cargo off a truck.

• Report vehicles with maintenance problems to port reception personnel.

• Secure radio whip antennas upon entering terminal. Remove antennas from tracked vehicles and store inside hull.

• Obey terminal speed limit.

• Don't leave personal or military items in your vehicle.

• Anything left in the vehicle cab should be wrapped, blocked, and braced inside the cab. Make sure vehicle windows are rolled up.

• Make sure all vehicle locks are locked.

• When driving in the vicinity of the port helipad—

- ❑ Remember, aircraft have right of way.
- ❑ Make sure your antenna is down.
- ❑ Look for ground direction from air traffic control (ATC) personnel.
- ❑ Proceed only when ATC personnel wave you forward.
- ❑ Dim your lights.

Supercargos

Supercargos are teams of soldiers who accompany, supervise, guard, and maintain unit equipment aboard the ship. An essential part of their job is to monitor and correct equipment lashings and tiedowns for security. They also provide key control, note items that cannot be repaired en route, and brief the port commander at the Seaport of Debarkation (SPOD) on vehicle conditions and any peculiar aspects of the cargo.

The size of the supercargo team dedicated to a ship must be consistent with the team's role in guarding and

maintaining the equipment en route, the resources available on the ship, and the additional costs required to equip and sustain the team en route. FM 55-65: Strategic Deployment by Surface Transportation is a good reference for supercargo team composition, function, planning, and operations.

The following rules are intended to help supercargos do their job safely and effectively:

Rule #1: The Captain is the ultimate authority on the ship. His or her word is absolute law and must be obeyed by every individual.

Rule #2: The First Mate is the Captain's right-hand man. If you have a problem, go to the First Mate. Before the ship sails, the First Mate should brief supercargo officers and NCOs on the following:

- General safety requirements.
- Fire and lifeboat drill and stations.
- Life preserver requirements.
- Restricted deck areas.
- Situations requiring immediate notification of the ship's crew (fire, ship taking water, etc.) and what to do in such cases.
- Layout of ship, including emergency escape hatches.
- Whistle signals and their meaning (collision warning whistle, abandon ship whistle, etc.).
- Ship's policy on alcohol.
- Chain of command.
- Call signs for ship's officers (for use when ship's brick-style radios are issued to supercargos).

Supercargo OIC/NCOIC

The following guidance will enable you to perform your job as supercargo OIC/NCOIC safely and efficiently.

- Provide the First Mate a manifest of the supercargo team (full name, rank, SSN, unit, place of birth, and citizenship). Also leave a copy with the Division G1.
- Check with mate before ship sails to verify if additional information is required.
- If the supercargo team has brick-style radios, ensure that

there is no frequency interference with the ship's brick-style radios.

• Provide team call signs to mate.

• Ask the mate for the ship's normal schedule for meals and when and where he wants the team to eat.

• Publish a daily, by-name roster of duties and specific locations where the duties will be performed. If a team member does not show up for lunch, you will know where to start looking.

• Start each morning with a safety briefing based on lessons learned from the previous day's activities. Be sure to call on each team member and solicit comments. Encourage the reporting of specific problems (oil or anti-freeze on decks, sharp projections, etc.) or potential problems so corrective action can be taken.

• Brief team members on expected weather conditions for the next 24 hours so they can dress appropriately.

• Establish a buddy system for hold checking and make sure each team going into a hold has a radio and checks into and out of the hold on the supercargo radio net. Record reported discrepancies for next day's briefing and planning of proper corrective actions. DO NOT let supercargo team members go into holds alone without a radio. If the member falls and is injured, he will not be missed until the next team accountability time (breakfast, lunch, supper, etc.).

• Decks in holds are always greasy and slippery. Boots pick up this oil and distribute it on ladders and walkways. Require team members to periodically wash the soles of their boots to remove accumulated grease and oil. In addition, ask the mate if work boots must be removed in crew quarters and mess areas (make sure supercargo team has clean sneakers).

• An essential part of your duties is to check aircraft and vehicle lashings to make sure they are properly tightened *but not over-tightened.* Find out what the First Mate's standards are, then ask him for a class on how to properly break and tighten the various types of chain tiedowns.

• Make sure you have the correct shipping TM for the aircraft on board and the latest TWX messages on aircraft tiedown procedures.

• Drill your supercargo team on lifeboat and abandon-ship procedures.

• Before boarding the ship, determine which team members can swim. Take only supercargos who can swim.

• Absolutely forbid and ruthlessly suppress horseplay.

• There are many locations on a vessel from which it is easy to fall overboard. Identify these areas through team feedback and soliciting information from the crew.

• As soon as the ship's blowers are turned off, you will hear vehicles running in each hold. (Longshoremen often forget to shut vehicles off during the loading rush.) It is imperative to check all the holds for running vehicles because—

- They fill the hold with carbon monoxide.
- They will eventually run out of fuel and cause delays during offloading.
- Vehicle ignition sparks and hot exhaust could ignite fumes from another vehicle.

• Pay special attention to vehicles loaded on ramps and on the deck. Not only are the walking areas in these locations treacherous, but also loose lashings and missing chocks could result in losing a vehicle over the side, or having the vehicle break loose on the ramp and hit the ship's watertight doors at the bottom of the ramps.

• Get team members to stow all supercargo gear as soon as possible after consultation with the First Mate.

Abandoning ship

Nobody likes the idea of abandoning ship, but it is sometimes necessary. Preplanned survival procedures increase the chances for successful rescue. Records show that, even in the worst cases, it takes at least 15 to 30 minutes for a sinking ship to fully submerge. This affords valuable time for preparation. The following pointers should be remembered:

• Wear as much warm clothing as possible. Cover head, neck, hands, and feet.

• Put immersion suit on, if you have one, over warm clothing.

• If prone to seasickness, take preventive medicine in a

dose recommended by the manufacturer. Vomiting removes body fluids and makes you more prone to hypothermia.

• If possible, avoid jumping into the water. Climb aboard a raft or boat on the embarkation deck. If this is not possible, use pilot ladders or lower yourself into the water by a rope or fire hose.

• If jumping into the water cannot be avoided, keep your elbows at your sides, and cover your nose and mouth with one hand while holding your wrist or elbow firmly with the other hand. If possible, do not jump from higher than 16 feet into the water.

• Once in the water, locate lifeboats, liferafts, survivors, or floating objects. Violent shivering and pain are natural body reflexes, but they're not dangerous. However, you must act as quickly as possible before you lose full use of your hands. Be sure to take precautions such as buttoning up clothing, turning on signal lights, and locating the whistle on your life jacket.

• Swim only to reach a nearby craft, a fellow survivor, or a floating object. Swimming increases the rate of body-heat loss by pumping out warm water between your body and the layers of clothing. Regardless of the intensity of the pain, remain as still as possible. Pain will not kill you, but heat loss can.

• Body position in the water is very important in conserving heat. Float as still as possible with your legs together, elbows close to your side and arms folded across the front of your life jacket. Keep your head and neck out of the water. Huddle closely with other survivors.

• Board a raft or a floating platform as soon as possible. You lose body heat faster in water than in air. Avoid wind chill by huddling close to other occupants.

• Certain drown-proofing techniques (relaxing in the water and allowing your head to submerge between breaths) should not be used in *cold* water. If you are in cold water and are not wearing a life jacket, tread water only as much as necessary to keep your head out of the water.

• Keep a positive attitude about your survival and rescue. The will to live *does* make a difference.

Section VII

Accident Reporting

Normal accident notification, investigation, and reporting have been waived for Operation Sustain Hope. Abbreviated accident report forms (Abbreviated Aviation Accident Report (AAA Report) and Abbreviated Ground Accident Report (AGAR) will be used as indicated below. These forms can be obtained from your command safety office forward.

Notification and reporting summary

Aviation accidents/incidents

Accident Class	Telephonic Notification	Abbreviated Aviation Accident Report (AAA Report)
A & B	Immediate—to USASC or Safety Rep Forward. Serves as PRAM; no hardcopy followup required.	Only when Commander determines DA Form 2397 investigation/report not feasible. Submit as soon as conditions/ situation permits—do not exceed 30 calendar days.
C	Immediate—to USASC or Safety Rep Forward. Serves as PRAM; no hardcopy followup required.	AAA Report replaces DA Form 2397 as report form. Submit as soon as conditions/situation permits—do not exceed 30 calendar days.
D, E, & FOD	Not applicable (unless safety-of-flight issue involved/ suspected).	AAA Report replaces PRAM as report form. Submit as soon as practical—do not exceed 10 calendar days.

Ground accidents

Accident Class	Telephonic Notification	Abbreviated Ground Accident Report (AGAR)
A & B	Immediate—to USASC or Safety Rep Forward.	**On duty:** Only when Commander determines DA Form 285 investigation/ report not feasible. Submit as time permits—do not exceed 30 calendar days. **Off duty:** AGAR replaces DA Form 285 as report form. Submit as time permits—do not exceed 30 calendar days.
C & D	Not applicable.	AGAR replaces DA Form 285 as report form. Submit as time permits—do not exceed 30 calendar days.

Telephonic notification

• Notification will be immediate, through the chain of command, to the immediate commander of all personnel involved and to the U.S. Army Safety Center (USASC) or the USASC-designated point of contact (Safety Rep Forward).

• Notification methods include radio-teletyped message (via Defense Data Network—DDN), telephone (USASC phone numbers: DSN 558-2660/3410, commercial 205-255-2660/3410), or other immediate means.

• Notification of aviation accidents will include PRAM information. Notification of ground accidents will include the following:

- ❑ Unit.
- ❑ Time/date of accident.
- ❑ Location of accident (coordinates).
- ❑ Name, rank, SSN, and MOS/job series of persons(s) involved.
- ❑ On/off duty.
- ❑ Component (RA, USAR, ARNG, civilian).
- ❑ What was the victim doing?
- ❑ What were the injuries?

❑ What materiel/property damage occurred?

❑ What was estimated accident classification? (Class A = $1,000,000 or more, Class B = $200,000 to $999,999).

❑ What happened?

Report transmission

Methods for transmission of accident report forms should be dictated by available resources (electronically, by message, by mail, by telefax (if time sensitive), or hand carried. When time sensitive safety-of-use issues are involved or suspected, telefax the report to USASC (DSN 558-9136, commercial 205-255-9136).

USASC addresses

- Mail: Commander, U.S. Army Safety Center, ATTN: CSSC-DA, Fort Rucker, Alabama 36362-5363.
- Message: CDR USASC FT RUCKER AL //CSSC-DA//.

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